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| 10/583,365 | 06/19/2006 | Shunpei Yamazaki | 0756-7752 | 6856 |

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| EXAMINER |
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BELOUSOV, ALEXANDER

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|---------------------------------------|--|--|
| Office Action Summary | Application No. 10/583,365 | Applicant(s) YAMAZAKI ET AL. | |
| | Examiner ALEXANDER BELOUSOV | Art Unit 2894 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 July 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 5-7 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 & 8-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>05/04/2010</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This Office Action is in response to the amendment filed on 07/27/2010. Currently, claims 1-4 & 8-20 have been examined.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on 05/04/2010 was filed after the mailing date of the Office Action on 04/27/2010. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. **Claim(s) 1-4, 10, 11 & 14-18** are rejected under 35 U.S.C. 103(a) as being unpatentable over (US-2001/0045593) by De Leeuw et al ("De Leeuw") in view of (US-2002/0105058) by Tuttle.

Regarding claims 1 & 2, De Leeuw discloses in FIG. 5 and related text (**NOTE**: the device of FIG. 5 is *arbitrarily* drawn with layer 41 on the bottom, and layer 1 on top; therefore, for the purposes of this rejection, look at FIG. 5 upside-down), **e.g.**, a semiconductor device comprising:

a substrate (11),

an integrated circuit including a thin film transistor (20),

Art Unit: 2894

an antenna having a conducting wire (40), and
an insulating film (or resin in claim 2) (41) comprising at least one selected from the group of polyimide, epoxy, acryl and polyamide (in the instant case, polyimide) over the conducting wire and the integrated circuit (see the FIG. 5 upside down; 41 is over everything), wherein the integrated circuit and the antenna are formed over the substrate to be electrically connected to each other (they are connected to each other).

De Leeuw does not disclose “particles comprising a soft magnetic material are included in the insulating film” (or resin in claim 2).

Tuttle discloses in FIG. 6 and related text, **e.g.**, particles comprising a soft magnetic material are included in the insulating film (110; see paragraph 26; nickel, iron or cobalt in polyimide).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the device of De Leeuw with “particles comprising a soft magnetic material are included in the insulating film”, in order to provide for electromagnetic shielding (Title, Abstract and Brief Summary).

Alternatively, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the device of De Leeuw with teachings of Tuttle, since combining prior art elements (De Leeuw’s polyimide insulation layer AND particles comprising a soft magnetic material of De Leeuw) according to known methods (as explained by De Leeuw) to yield predictable results (electromagnetic shielding, according to De Leeuw) is considered obvious to one of ordinary skill in the art.

Art Unit: 2894

Alternatively, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the device of De Leeuw with teachings of Tuttle, since substitution of one known element (top polyimide layer of De Leeuw) for another known equivalent element (top polyimide layer of Tuttle; now containing particles) resulting in the predictable result (electromagnetic shielding for the device) is considered obvious to one of ordinary skill in the art.

Please note that the reference to Fujieda, cited in previous rejections, also teaches the importance of absorption of electromagnetic radiation.

Regarding claims 3 & 4, De Leeuw discloses in FIG. 5 and related text (**NOTE**: the device of FIG. 5 is *arbitrarily* drawn with layer 41 on the bottom, and layer 1 on top; therefore, for the purposes of this rejection, look at FIG. 5 upside-down), **e.g.**, a semiconductor device comprising:

- a substrate (11),

- an integrated circuit including a thin film transistor (20),

- an antenna having a conducting wire (40), and

- a first insulating film (or insulating film in claim 4) (49) covering the conducting wire and the thin film transistor (directly contacts both; hence, “covering”), and

- a second insulating film (or a resin film in claim 4) (41) comprising at least one selected from the group of polyimide, epoxy, acryl and polyamide (in the instant case, polyimide) over the first insulating film covering the conducting wire and the integrated circuit (see the FIG. 5 upside down; 41 is over everything), wherein the integrated circuit and the antenna are formed over the substrate to be electrically connected to each other (they are connected to each other).

Art Unit: 2894

De Leeuw does not disclose “particles comprising a soft magnetic material are included in the second insulating film” (or resin film in claim 4).

Tuttle discloses in FIG. 6 and related text, **e.g.**, particles comprising a soft magnetic material are included in the second insulating film (110; see paragraph 26; nickel, iron or cobalt in polyimide).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the device of De Leeuw with “particles comprising a soft magnetic material are included in the second insulating film”, in order to provide for electromagnetic shielding (Title, Abstract and Brief Summary).

Alternatively, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the device of De Leeuw with teachings of Tuttle, since combining prior art elements (De Leeuw’s polyimide insulation layer AND particles comprising a soft magnetic material of De Leeuw) according to known methods (as explained by De Leeuw) to yield predictable results (electromagnetic shielding, according to De Leeuw) is considered obvious to one of ordinary skill in the art.

Alternatively, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the device of De Leeuw with teachings of Tuttle, since substitution of one known element (top polyimide layer of De Leeuw) for another known equivalent element (top polyimide layer of Tuttle; now containing particles) resulting in the predictable result (electromagnetic shielding for the device) is considered obvious to one of ordinary skill in the art.

Art Unit: 2894

Please note that the reference to Fujieda, cited in previous rejections, also teaches the importance of absorption of electromagnetic radiation.

Regarding claim 10, De Leeuw discloses in FIG. 5 and related text, **e.g.**, the integrated circuit and the antenna are formed over a flexible substrate (the substrate is polysulfon; it is an organic material which is flexible when compared to a diamond substrate).

Regarding claim 11, De Leeuw discloses in FIG. 5 and related text, **e.g.**, the conducting wire (as explained above).

Regarding the process limitations recited in claim 11 (“formed by an electroplating method, an electroless plating method, a printing method, or a droplet discharging method”), these would not carry patentable weight in this claim drawn to a structure, because distinct structure is not necessarily produced.

Note that a “product by process” claim is directed to the product per se, no matter how actually made, *In re Hirao*, 190 USPQ 15 at 17 (footnote 3). See also *In re Brown*, 173 USPQ 685; *In re Luck*, 177 USPQ 523; *In re Fessmann*, 180 USPQ 324; *In re Avery*, 186 USPQ 161; *In re Wertheim*, 191 USPQ 90 (209 USPQ 554 does not deal with this issue); and *In re Marosi et al.*, 218 USPQ 289, all of which make it clear that it is the patentability of the final product per se which must be determined in a “product by process” claim, and not the patentability of the process, and that an old or obvious product produced by a new method is not patentable as a product, whether claimed in “product by process” claims or not. Note that the applicant has the burden of proof in such cases, as the above case law makes clear.

Regarding claim 14, the combination of De Leeuw and Tuttle discloses the soft magnetic material is Fe; Co; Ni; an alloy including at least one of Fe, Co, and Ni;

Art Unit: 2894

3Y2O3.5Fe2O3 (YIG); Fe2O3; Fe-Si-Al alloy; Fe-Cr alloy; FeP alloy; a permalloy in which Ni or Ni-Fe alloy is added with at least one of Mo, Cu, Cr, and Nb; or a soft ferrite (see paragraph 26 of Tuttle).

Regarding claims 15-18, the combination of De Leeuw and Tuttle discloses in cited figures and related text, **e.g.**, wherein the antenna is provided over the integrated circuit (see FIG. 5 of De Leeuw, upside-down, as was explained above).

5. **Claim(s) 12 & 13** are rejected under 35 U.S.C. 103(a) as being unpatentable over (US-2001/0045593) by De Leeuw et al (“De Leeuw”) and (US-2002/0105058) by Tuttle as applied to claim(s) 1 above, and further in view of (JP-10-135040) by Urano et al (“Urano”; part of Applicant’s IDS; hence, not mentioned on Notice of References, and no translation is provided).

Regarding claim 12, De Leeuw and Tuttle disclose in cited figures and related text, **e.g.**, substantially the entire claimed structure, as recited in claim(s) 1, except “the conducting wire includes a first conductor and a second conductor covering the first conductor”.

In other words, the prior art device teaches a single layer antenna and claim 12 requires a two layered antenna. However, Urano fixes the deficiency.

Urano discloses in FIG. 1(a and b) and related text, **e.g.**, the conducting wire includes a first conductor (5a) and a second conductor (5b) covering the first conductor.

It would have been obvious to one of ordinary skill in the art at the time of the invention to further modify the device of De Leeuw and Tuttle with “the conducting wire includes a first conductor and a second conductor covering the first conductor” in order to provide for a much bigger antenna in the same die area (twice as much metal in the same amount of die space).

Regarding claim 13, the combination of De Leeuw, Tuttle and Urano discloses, **e.g.**, the second conductor (as explained above).

Regarding the process limitations recited in claim 13 (“formed by an electroplating method, an electroless plating method, or a droplet discharging method”), these would not carry patentable weight in this claim drawn to a structure, because distinct structure is not necessarily produced.

Note that a “product by process” claim is directed to the product per se, no matter how actually made, In re Hirao, 190 USPQ 15 at 17 (footnote 3). See also In re Brown, 173 USPQ 685; In re Luck, 177 USPQ 523; In re Fessmann, 180 USPQ 324; In re Avery, 186 USPQ 161; In re Wertheim, 191 USPQ 90 (209 USPQ 554 does not deal with this issue); and In re Marosi et al., 218 USPQ 289, all of which make it clear that it is the patentability of the final product per se which must be determined in a “product by process” claim, and not the patentability of the process, and that an old or obvious product produced by a new method is not patentable as a product, whether claimed in “product by process” claims or not. Note that the applicant has the burden of proof in such cases, as the above case law makes clear.

6. **Claim(s) 8, 9, 19 & 20** are rejected under 35 U.S.C. 103(a) as being unpatentable over (US-2001/0045593) by De Leeuw et al (“De Leeuw”) in view of (US-2002/0105058) by Tuttle and further in view of (US-2003/0234294) by Uchihiro et al (“Uchihiro”).

Regarding claims 8 & 9, De Leeuw discloses in FIG. 5 and related text (**NOTE**: the device of FIG. 5 is *arbitrarily* drawn with layer 41 on the bottom, and layer 1 on top; therefore, for the purposes of this rejection, look at FIG. 5 upside-down), **e.g.**, a semiconductor device comprising:

Art Unit: 2894

a substrate (11),
an integrated circuit including a thin film transistor (20),
an antenna having a conducting wire (40), and
a first insulating film (or insulating film in claim 9) (41) covering the conducting wire and the thin film transistor (it is above both; hence, “covering”),
wherein the integrated circuit and the antenna are formed over the substrate to be electrically connected to each other (they are connected to each other).

De Leeuw does not disclose “a second insulating film (or a resin film in claim 9) comprising at least one selected from the group of polyimide, epoxy, acryl and polyamide over the integrated circuit and at least adjacent to a side of the conducting wire by interposing the first insulating film therebetween” and “particles comprising a soft magnetic material are included in the second insulating film” (or resin film in claim 4).

In short, De Leeuw fails to teach a two layer polyimide substrate that would read on the “second insulating layer” (De Leeuw teaches a single layer polyimide substrate instead) and De Leeuw fails to teach a conductive particle inside that second insulating film. However, Uchihiro and Tuttle, respectively, fix the above two deficiencies.

Uchihiro discloses in FIG. 5(a) and related text, **e.g.**, a two layer polyimide substrate (21; see paragraph 118; it lists polyimide as one of the substrate materials; it also teaches “at least two layer laminated bodies thereof”; to verify that the “two layer laminated” refers to polyimide also, compare to the wording of paragraph 163 which is slightly different; therefore, 21 can be two layers of polyimide one laminated on the other).

Art Unit: 2894

Tuttle discloses in FIG. 6 and related text, **e.g.**, particles comprising a soft magnetic material are included in the second insulating film (110; see paragraph 26; nickel, iron or cobalt in polyimide).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the device of De Leeuw with “a two layer polyimide substrate” and “particles comprising a soft magnetic material are included in the second insulating film”, in order to further adjust the properties of the device (a two layer polyimide substrate will behave mechanically differently from a single layer polyimide device) and in order to provide for electromagnetic shielding (Title, Abstract and Brief Summary), respectively.

Alternatively, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the device of De Leeuw with teachings of Uchihiro, since substitution of one known element (a single layer polyimide substrate) for another known equivalent element (a two layer polyimide substrate; it is known equivalent because Uchihiro teaches so) resulting in the predictable result (a functional substrate) is considered obvious to one of ordinary skill in the art.

Alternatively, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the device of De Leeuw with teachings of Uchihiro, since choosing from finite number of predictable solutions (as evidenced by Uchihiro) to yield result suitable for the task (a substrate) is considered obvious to one of ordinary skill in the art.

Alternatively, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the device of De Leeuw with teachings of Tuttle, since combining prior art elements (De Leeuw’s polyimide insulation layer AND particles comprising a soft magnetic

Art Unit: 2894

material of De Leeuw) according to known methods (as explained by De Leeuw) to yield predictable results (electromagnetic shielding, according to De Leeuw) is considered obvious to one of ordinary skill in the art.

Alternatively, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the device of De Leeuw with teachings of Tuttle, since substitution of one known element (top polyimide layer of De Leeuw) for another known equivalent element (top polyimide layer of Tuttle; now containing particles) resulting in the predictable result (electromagnetic shielding for the device) is considered obvious to one of ordinary skill in the art.

When teachings of Uchihiro are applied to the device of De Leeuw (so, instead of a single-layer polyimide substrate 41, there is a two-layer substrate 41), it will result in “a second insulating film (or a resin film in claim 9) (the outside one of the two polyimide substrates) comprising at least one selected from the group of polyimide, epoxy, acryl and polyamide over the integrated circuit and at least adjacent to a side of the conducting wire by interposing the first insulating film therebetween” (the first polyimide substrate would be between the second polyimide substrate and the integrated circuit and the antenna, thus meeting the limitations of the claim).

Regarding claims 19 & 20, the combination of De Leeuw, Tuttle and Uchihiro discloses in cited figures and related text, **e.g.**, wherein the antenna is provided over the integrated circuit (see FIG. 5 of De Leeuw, upside-down, as was explained above).

Response to Arguments

1. Applicant's arguments with respect to above claims have been considered but are moot in

Art Unit: 2894

view of the new ground(s) of rejection.

Conclusion

1. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexander Belousov whose telephone number is 571-270-3209. The examiner can normally be reached on Monday - Thursday 7:30AM - 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kimberly Nguyen can be reached on 571-272-2402. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR

Art Unit: 2894

system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Alexander Belousov/
Examiner, Art Unit 2894
10/12/2010

/Bradley K Smith/
Primary Examiner, Art Unit 2894